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Attorney's Docket No.: 10010075-1
Reply to Office action dated October 23, 2003

Amendments to the Specification

Please replace the paragraph extending from page 6, line 15, through page 7, line 2, with the following amended paragraph:

Referring to both FIG. 1 and FIG. 2, in operation, ballpark classifier 14 is generated by first inducer 16 from a set 18 of training records corresponding to the entire set of potential classes into which new instance 12 may be classified (step 30). Once built, ballpark classifier 14 is applied to new instance 12 to select a subset 26 of two or more of the potential classes to which new instance 12 is determined to likely belong (step 32). In one embodiment, ballpark classifier 14 is a Naïve Bayes classifier that is configured to assign to each of the potential classes (c_i) a probability estimate (p_i) of new instance 12 belonging to the class. In this embodiment, the ballpark class set (S_1) may be generated by selecting a preselected number (N) of potential classes (i.e., $S_1 = \{c_1, c_2, \ldots, c_N\}$) having the highest assigned probability estimates (i.e., $S_1 = \{c_1, c_2, \ldots, c_N\}$). Alternatively, the ballpark class set (S_1) may be generated by selecting a number of most likely classes until their cumulative assigned probability estimate (i.e., $p_1 + p_2 + \ldots + p_K$) exceeds a preselected threshold P_{CUM} [[(P_{CUM})]] (i.e., $p_1 + p_2 + \ldots + p_K \geq P_{CUM}$). Scrutiny classifier 20 is generated by second inducer 22 from a second set of training records corresponding to the subset of classes selected by ballpark classifier 14 (step 34). The second training records subset set 24 may be identified by applying a record filter 36 to the entire training records set 18. Once built, scrutiny classifier 20 is applied to new instance 12 to identify a set 38 of at least one class to which new instance 12 most likely belongs (step 40).

Please replace the paragraph at page 7, lines 16-24, with the following amended paragraph:

In some embodiments, scrutiny classifier 20 may be generated on-the-fly as soon as ballpark class subset set 26 has been selected by ballpark classifier 14. In other embodiments, scrutiny classifier 20 may be generated beforehand in anticipation of a new instance to be classified. In these embodiments, scrutiny classifiers that are generated during a particular classification session may be cached

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(i.e., stored in short term memory). Alternatively, a set of scrutiny classifiers may be pre-generated, for example, based upon a determination of the sets of classes that are most likely to occur. The particular scrutiny classifiers that are pre-generated may be selected based upon training cases, experience, or one or more theoretical models.

Please replace the paragraph extending from page 7, line 25, through page 8, line 5, with the following amended paragraph:

Referring to FIGS. 1 and FIG. 3, in one embodiment, new instance 12 may be classified using a pre-generated scrutiny classifier as follows. After being built, ballpark classifier 14 is applied to new instance 12 to select a subset 26 of two or more of the potential classes to which new instance 12 is determined to likely belong (step 42). If a pre-generated classifier exists for a class subset that is inclusive of the subset of classes that are selected by ballpark classifier 14 (step 44), that pre-generated classifier is applied to new instance 12 to identify a set 38 of at least one class to which new instance 12 most likely belongs (step 46). Otherwise a scrutiny classifier 20 is generated on-the-fly by second inducer 22 from a second set of training records corresponding to the subset of classes selected by ballpark classifier 14 (step 48). Once built, scrutiny classifier 20 is applied to new instance 12 to identify a set 38 of at least one class to which new instance 12 most likely belongs (step 46).

Please replace the paragraph extending from page 8, line 25, through page 9, line 8, with the following amended paragraph:

Referring to FIGS. 1 and As shown in FIG. 4, in one embodiment, after being built, ballpark classifier 14 is applied to new instance 12 to select a first subset (R_1) of two or more of the potential classes to which new instance 12 is determined to likely belong (step 60). An iteration counter (C) initially is set to a value of 1 (step 62). If the set of proposed classes has been narrowed sufficiently (e.g., only one or a small number of classes remain) (step 64), one or more class labels corresponding to the selected first subset of classes are assigned to the new instance (step 66). Otherwise, the iteration counter is incremented by 1 (step 68), and a scrutiny classifier is generated from training records corresponding to first class subset R_1 and applied to

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the new instance to select a second subset of classes (R_2, where $R_2 \subset R_1$) to which the new instance is determined to likely belong (step 70). If the set of proposed classes has been narrowed sufficiently (step 64), one or more class labels corresponding to the selected subset of classes are assigned to the new instance (step 66). Otherwise, the process is repeated until the set of proposed classes has been narrowed sufficiently (steps 64, 68, 70).